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(11) **EP 0 940 340 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
22.08.2001 Bulletin 2001/34

(51) Int Cl.7: **B65B 19/22**, B65B 19/04,
B65G 47/84

(21) Application number: **99104386.0**

(22) Date of filing: **04.03.1999**

(54) **Method and unit for transferring a group of cigarettes continuously between conveyors**

Verfahren und Einheit zum kontinuierlichen Überführen einer Zigarettengruppe zwischen Förderern

Procédé et unité de transfert en continu d'un groupe de cigarettes entre des convoyeurs

(84) Designated Contracting States:
DE ES FR GB IT PT

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(43) Date of publication of application:
08.09.1999 Bulletin 1999/36

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(56) References cited:
EP-A- 0 295 557 **EP-A- 0 548 978**

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EP 0 940 340 B1

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Description

[0001] The present invention relates to a method of transferring a group of cigarettes continuously between conveyors.

[0002] More specifically, the present invention relates to a method of continuously transferring a group of cigarettes from a seat on a continuous supply conveyor to a corresponding seat on a continuous wrapping conveyor or wheel.

[0003] Here and hereinafter, the term "group of cigarettes" is intended to mean a number of cigarettes arranged in a number of layers with no outer sheet of wrapping material, i.e. a number of cigarettes which, to remain together, need some sort of outer retaining wrapping.

[0004] In known units for transferring a group of cigarettes from a seat on a continuous supply conveyor to a corresponding seat on a continuous wrapping wheel, as described for example in British Patent No. 1,203,259, which corresponds to the preambles of claims 1 and 12, the supply conveyor is normally defined by a chain or belt conveyor, the seats of which are fed along a path having one portion - hereinafter referred to as the "transfer portion" - which reproduces a portion of the circular path along which the seats on the wrapping wheel are fed. Along the transfer portion, the seats on the supply conveyor are moved in time, and maintained coaxial, with the corresponding seats on the wrapping wheel to transfer the group of cigarettes axially between two corresponding coaxial seats.

[0005] Axial transfer involves several drawbacks by subjecting the group of cigarettes to fairly severe mechanical stress (especially on modern packing machines capable of producing over ten packets a second) which may result in deformation of the cigarettes or tobacco fallout.

[0006] Axial transfer also requires that the supply conveyor and wrapping wheel be positioned side by side, i.e. in two different planes, which therefore increases the overall depth of the transfer unit and complicates control and maintenance.

[0007] Finally, the need for a common path portion - defined by said transfer portion - between the wrapping wheel and the supply conveyor makes for a highly rigid arrangement of the conveyors, and calls for an extremely long and therefore bulky, high-cost chain or belt, as shown clearly by the device described in British Patent No. 1,203,259. A shorter chain or belt may be used, but only on condition that it be fed along a much more tightly curving path, thus subjecting the chain or belt to extremely severe mechanical stress.

[0008] EP Patent No. 548,978 discloses a unit for continuously transferring a group of cigarettes between relevant seats of two wrapping wheels. At a given transfer zone the seats on the two wheels are maintained facing and parallel to each other and to a fixed direction - in particular, a direction perpendicular to the respective ax-

es of rotation of the wheels - by moving, in particular oscillating, the seats continuously with respect to the respective wheels.

[0009] It is an object of the present invention to provide a method of continuously transferring a group of cigarettes, designed to eliminate the aforementioned drawbacks, and which in particular is straightforward and cheap to implement.

[0010] According to the present invention, there is provided a method of transferring a group of cigarettes continuously between conveyors, as defined in appended claim 1.

[0011] The present invention also relates to a unit for transferring a group of cigarettes continuously between conveyors.

[0012] According to the present invention, there is provided a unit for transferring a group of cigarettes continuously between conveyors, as defined in appended claim 12.

[0013] A number of non-limiting embodiments of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic front view of a first preferred embodiment of the unit according to the present invention;

Figure 2 shows a schematic front view of a first detail of the Figure 1 unit in different operating positions;

Figure 3 shows a larger-scale schematic front view of a second detail of the Figure 1 unit in different operating positions;

Figure 4 shows a larger-scale view in perspective of a third detail of the Figure 1 unit;

Figure 5 shows a larger-scale schematic front view of the Figure 1 detail in different operating positions;

Figure 6 shows a schematic front view of a second embodiment of the unit according to the present invention.

[0014] Number 1 in Figure 1 indicates as a whole a transfer unit forming part of a continuous automatic packing machine for producing packets of cigarettes not shown. On unit 1, a group 2 of cigarettes is formed (in known manner not shown) inside a respective seat 3 fed continuously and a direction D1 along a path P1 by an endless forming conveyor 4, and is then transferred to a corresponding seat 5 fed continuously and in a direction D2 along a path P2 by an endless wrapping conveyor defined by a wrapping wheel 6.

[0015] Path P1 is coplanar with path P2, and comprises an initial loading portion P3 at a loading station S1, and a final transfer portion P4 at a transfer station S2 where the group 2 of cigarettes is transferred by a seat 7 carried by a transmission pulley 8 of conveyor 4. Seat 7 is a movable seat for receiving group 2 from seat 3 on forming conveyor 4 and feeding group 2 to the corresponding seat 5 on wrapping wheel 6.

[0016] At transfer station S2, pulley 8 feeds each seat 7 along a path substantially coincident with transfer portion P4 of path P1.

[0017] Group 2 is confined within a substantially parallelepiped space defined by a pair of parallel large lateral surfaces 9a, and by a pair of parallel small lateral surfaces 9b perpendicular to surfaces 9a. As shown more clearly in Figure 4, said space also comprises two opposite longitudinal ends 9c, and a central portion 9d interposed between the two longitudinal ends 9c.

[0018] Along loading portion P3 of path P1, group 2 is conveyed by forming conveyor 4 with a first orientation with respect to direction D1, and wherein small lateral surfaces 9b are substantially perpendicular to direction D1; and along path P2, group 2 is conveyed by wrapping wheel 6 with a second orientation with respect to direction D2, and wherein large lateral surfaces 9a are substantially perpendicular to direction D2. When transferred from conveyor 4 to wheel 6, group 2 is obviously rotated 90° about its own longitudinal axis (not shown) parallel to the cigarettes forming group 2.

[0019] Before being fed through transfer station S2, each seat 5 is fed through a supply station (not shown) where seat 5 receives a sheet 10 of foil wrapping material, which is folded into a U inside seat 5, and in which a respective group 2 is wrapped after being transferred to corresponding seat 5.

[0020] Wrapping wheel 6 comprises a cylinder 11 powered to rotate continuously (clockwise in Figure 1) about a central axis 12 perpendicular to the Figure 1 plane; and a number of peripheral heads 13 (only one shown) equally spaced about axis 12. Each head 13 defines a respective seat 5 for first receiving and conveying a respective sheet 10 of wrapping material folded substantially into a U, and for subsequently receiving and conveying a respective group 2 of cigarettes, which is wrapped in sheet 10 of wrapping material as the group is fed along path P2.

[0021] Each head 13 is hinged to cylinder 11 and is oscillated about an axis 14 parallel to axis 12 by a known cam control device 15 (shown schematically in Figure 1); and seat 5 of each head 13 is defined by an end wall 16 fitted to head 13, and by two lateral walls 17, which are hinged to opposite ends of wall 16 and are oscillated, by a control device 19 and about respective axes 18 parallel to axis 12, between an open and a closed position.

[0022] As shown in Figure 1, control device 19 comprises a slide 19a supporting end wall 16 and which is moved along head 13, in a direction perpendicular to end wall 16, by a known cam device (not shown); and two ties 19b, each of which is interposed between head 13 and an intermediate point along a respective lateral wall 17, so that each axial movement of slide 19a with respect to head 13 rotates lateral walls 17 about respective axes 18.

[0023] In the open position, the two lateral walls 17 of each seat 5 form an obtuse angle with end wall 16, and seat 5 has a section in the form of an isosceles trapezi-

um. In the closed position, the two lateral walls 17 of each seat 5 substantially form a right angle with end wall 16, and seat 5 has a rectangular section of substantially the same size as group 2 so as to engage group 2 completely, i.e. at both central portion 9d and longitudinal ends 9c.

[0024] The inner surfaces of walls 16 and 17 comprise a number of holes (not shown) connected to a known suction device (not shown) carried by wrapping wheel 6.

[0025] Each head 13 also comprises a known folding device or arm 20, which is hinged to head 13 and oscillated about axis 14 by a known cam device (not shown) to longitudinally fold a projecting portion of a sheet 10 of wrapping material folded into a U about a respective group 2 of cigarettes and housed inside seat 5.

[0026] Forming conveyor 4 comprises a known flexible endless toothed belt 21 (shown partly in Figure 1) fed along path P1 (shown partly in Figure 1) by pulley 8, which comprises a toothed central roller 22 rotating continuously (anticlockwise in Figure 1) about a central axis 23 parallel to axis 12.

[0027] Loading station S1 is shown schematically in Figure 1 and, in a first embodiment, is substantially located at the point at which a complete group 2 of cigarettes is fed to a respective seat 3 by a known forming unit not shown. In a further embodiment, conveyor 4 is a forming conveyor for forming groups 2, and loading station S1 is substantially located along a portion of conveyor 4 in which a group 2 of cigarettes is formed layer by layer inside a respective seat 3 by a known hopper-type forming device (not shown) as described for example in US Patent No. 5,070,991.

[0028] Transfer portion P4 of path P1 is located at transfer station S2 and at pulley 8, and extends substantially along an initial portion of a curved portion of path P1 extending about axis 23.

[0029] Conveyor 4 also comprises a number of heads 24 (only one shown) carried by and equally spaced along belt 21. As shown more clearly in Figure 2, each head 24 defines a respective seat 3 having a longitudinal dimension (perpendicular to the Figure 2 plane) smaller than that of group 2, and having a rectangular section of substantially the same transverse size as group 2, so as to engage group 2 by central portion 9d while leaving respective longitudinal ends 9c substantially free.

[0030] Each head 24 is connected to belt 21 in substantially fixed manner by means of two pins 25, which cooperate with respective seats 26 on head 24 to enable head 24 to move slightly with respect to belt 21 to adjust to the curved portions of path P1.

[0031] Each head 24 has a retaining device 27 comprising two jaws 28 integral with belt 21 and which oscillate between a gripping position (as shown for example in Figure 2a) along the straight portions of belt 21, and a release position (as shown for example in Figure 2c) along the curved portions (only one shown) of belt 21.

[0032] In addition to roller 22, pulley 8 comprises two flanges 29 (only one shown) coaxial with axis 23 and supporting, in between, a number of peripheral heads 30 (only one shown in Figure 1) equally spaced about axis 23 and mounted for rotation about respective axes 31 parallel to axis 23.

[0033] As shown more clearly in Figures 4 and 5, each head 30 has a pin 32 coaxial with axis 31 and fitted at opposite ends to two appendixes 33 of respective flanges 29; each head 30 comprises two gripping devices 34, which together define a respective seat 7; and each gripping device 34 comprises two relatively thin L-clamps 35 located in the same plane perpendicular to axis 31, and movable, with respect to each other and in said plane, between a release position (Figure 5a) and a gripping position (Figure 5b) in which clamps 35 define a tubular seat 35a having an axis parallel to axis 31 and a rectangular section of approximately the same size as but no larger than the cross section of a group 2. Each gripping device 34 is fitted to a respective rocker arm 36 hinged about axis 31 by a central sleeve 37 fitted in rotary and axially-sliding manner to respective pin 32.

[0034] The angular and axial position of each sleeve 37 is controlled by an actuating and control device 38, which comprises an arm 39 projecting radially from sleeve 37 and fitted on the free end with a tappet roller 40, which rotates about a respective axis perpendicular to axis 31 and engages a track 41 formed in a fixed cam 42 located between flanges 29 and forming part of device 38. Track 41 extends about axis 23 to control the axial position of sleeve 37 along respective pin 32 alongside variations in the angular position of respective seat 7 about axis 23.

[0035] Actuating and control device 38 also comprises, for each sleeve 37, an arm 43 projecting radially from sleeve 37; and a tappet roller 44 fitted to the free end of arm 43 to rotate, about a respective axis parallel to axis 31, along a respective track 45 formed on cam 42 and extending about axis 23 to control the angular position of sleeve 37 about axis 31 of respective pin 32 alongside variations in the angular position of respective seat 7 about axis 23.

[0036] Each gripping device 34 also has an actuating device 46 comprising an articulated parallelogram 47, which in turn comprises two parallel rods 48 hinged to rocker arm 36, and two parallel rods 49, each fitted at one end with a respective L-clamp 35 of gripping device 34. One of the two rods 49, indicated 49a, is fitted, on the opposite end to that supporting respective clamp 35, with a tappet roller 50 mounted for rotation, about a respective axis parallel to axis 31, along a respective track 51 formed on cam 42 and extending about axis 23 to control the axial position of rod 49a with respect to respective pin 32 alongside variations in the angular position of respective seat about axis 23.

[0037] Track 41 of cam 42 is so formed that, as pulley 8 rotates about axis 23, the two rocker arms 36 of each seat 7 are moved, along axis 31 of respective pin 32,

between an open position of respective gripping device 34 - wherein the two tubular seats 35a are separated by a distance greater than the length of a respective group 2 of cigarettes - and a closed position of respective gripping device 34 - wherein the two tubular seats 35a define respective seat 7 and grip and retain a respective group 2 of cigarettes by engaging ends 9c of group 2.

[0038] Track 45 of cam 42 is so formed that, as pulley 8 rotates about axis 23, the two rocker arms 36 of seat 7 are rotated, about axis 31 of respective pin 32, between a loading position - wherein seat 7 coincides with a respective seat 3 to remove a group 2 of cigarettes from seat 3 - and an unloading position - wherein seat 7 coincides with a respective seat 5 to transfer group 2 to seat 5.

[0039] Track 51 of cam 42 is so formed that, as pulley 8 rotates about axis 23, rod 49a is moved, with respect to respective pin 32, to deform articulated parallelogram 47 and move clamps 35 between said gripping and release positions.

[0040] Operation of unit 1 will be described with reference to one group 2 of cigarettes, and as of when group 2 arrives at station S1.

[0041] Belt 21 moves continuously to feed seat 3 and respective group 2 of cigarettes along path P1, first along loading portion P3 and then along transfer portion P4 at transfer station S2.

[0042] As shown more clearly in Figure 2, as seat 3 is fed by conveyor 4 along transfer portion P4, gripping devices 34 of a corresponding seat 7 are set by control devices 38 and 46 to said open and release positions (Figure 2a). Control device 38 then swings seat 7 about respective axis 31 to assume and maintain for a given length of time a position substantially coincident with seat 3 (Figure 2b) and wherein control devices 38 and 46 set gripping devices 34 of seat 7 to said closed and gripping positions to grip group 2. At the same time, the curvature of transfer portion P4 moves retaining device 27 of seat 3 into said release position to leave group 2 under the control of seat 7 (Figure 2c).

[0043] At this point, seat 7 is rotated about respective axis 31 to extract group 2 from seat 3 (Figure 2d) and feed the group towards a corresponding seat 5, which, as wrapping wheel 6 rotates continuously, is being fed through transfer station S2 (Figure 1) with lateral walls 17 in said open position, and with a U-folded sheet 10 of wrapping material housed and retained inside by said suction device (not shown).

[0044] As shown more clearly in Figure 3, in the neighbourhood of transfer station S2, seat 7 and corresponding seat 5 are swung about respective axes 31 and 14 by respective control devices 38 and 15 to assume and maintain for a given length of time a substantially mutually coincident position (Figure 3a), whereupon control device 19 moves lateral walls 17 of seat 5 into said closed position to grip group 2 and at the same time finish-fold sheet 10 of wrapping material into a U about group 2 (Figure 3b).

[0045] In the Figure 3b position, seat 5, with sheet 10 of wrapping material in between, engages both group 2 and clamps 35 of gripping devices 34 of seat 7, which is made possible by the thinness of clamps 35.

[0046] Once group 2 is gripped by seat 5, control device 38 moves gripping devices 34 of seat 7 into said open position, so that clamps 35, though still in said gripping position, are withdrawn longitudinally with respect to group 2 to release group 2.

[0047] At this point, seats 5 and 7 move out of said mutually coincident position, and control device 38 restores seat 7 to the initial position. At the same time, folding device 20 of seat 5 is activated to longitudinally fold sheet 10 of wrapping material about group 2, and wrapping wheel 6 rotates continuously to feed seat 5 through successive known folding stations (not shown).

[0048] In a further embodiment not shown, seats 7 are carried by forming conveyor 4 itself, and each seat 3 is assigned a respective seat 7 fitted to conveyor 4 and adjacent to seat 3.

[0049] In a further embodiment shown in Figure 6, seats 3 on forming conveyor 4 are as described in European Patent Application No. 812,765, and each engage the longitudinal ends of a respective group 2 of cigarettes; seats 3 are carried by respective forks 52 fitted to belt 21 so as to rotate about respective axes 31 parallel to axis 23 of pulley 8; and, along transfer portion P4, a known cam control device (not shown) rotates each seat 3 about respective axis 31 to transfer respective group 2 to a corresponding seat 5 in exactly the same way as described for seats 7.

Claims

1. A method of transferring a group of cigarettes continuously between conveyors, the method comprising a conveying step wherein said group (2) is fed, by means of a first conveyor (4) traveling continuously in a first direction (D1), along a first path (P1) comprising an initial straight loading portion (P3) and a final transfer portion (P4) in a first orientation with respect to said first direction (D1); and a transfer step wherein said group (2) is transferred, as the group (2) travels along said transfer portion (P4), from said first conveyor (4) to a second conveyor (6) traveling continuously in a second direction (D2) along a second path (P2); the method being characterized in that said first path (P1) and said second path (P2) are coplanar; said transfer step being performed by housing the group (2) in said first orientation, at least as the group is fed along said transfer portion (P4), inside a movable seat (7; 3), which is fed by said first conveyor (4) at least along said transfer portion (P4), and is simultaneously moved, with respect to said first conveyor (4) and as the movable seat travels along the transfer portion (P4), between a first position along said first path (P1)

and a second position along said second path (P2), so as to effect a rotation of said group (2) from said first orientation with respect to said first direction (D1) to a second orientation with respect to said second direction (D2), whereby the group (2) travels along said straight loading portion (P3) and said second path (P2) with two respective different orientations with respect to said first direction (D1) and said second direction (D2) respectively, said two orientations being substantially at 90° to each other.

2. A method as claimed in Claim 1, wherein said first conveyor (4) and said second conveyor (6) comprise a first seat (3) and a second seat (5) respectively for said group (2); said movable seat (7; 3) being said first seat (3), which is fed along said loading portion (P3) in a substantially fixed position with respect to said first conveyor (4), and is moved, along said transfer portion (P4), with respect to the first conveyor (4) to transfer the group (2) to the second seat (5).
3. A method as claimed in Claim 1, wherein said first conveyor (4) and said second conveyor (6) comprise a first seat (3) and a second seat (5) respectively for said group (2); said movable seat (7; 3) being a third seat (7), which is fed along said transfer portion (P4) to engage said group (2) housed inside the first seat (3), and is moved with respect to the first seat (3) to remove the group (2) from the first seat (3) and transfer the group (2) to the second seat (5).
4. A method as claimed in Claim 2 or 3, wherein said second conveyor (6) is a wrapping conveyor; said second seat (5) housing a sheet (10) of wrapping material folded substantially into a U; and said sheet (10) of wrapping material being fed to said second seat (5) before said group (2) is transferred to the second seat (5).
5. A method as claimed in Claim 4, wherein said second seat (5) is defined by an end wall (16), and by two lateral walls (17) movable between an open first position and a closed second position; said two lateral walls (17) being maintained in said first position during transfer of said group (2), and being moved into said second position to hold together said sheet (10) of wrapping material and said group (2).
6. A method as claimed in Claim 3, 4 or 5, wherein said third seat (7) is fed along said transfer portion (P4) at a speed substantially equal to the traveling speed of said first seat (3).
7. A method as claimed in any one of Claims 1 to 6, wherein said rotation is effected by rotating the group (2) about a first axis (31) movable with the

first conveyor (4) along said transfer portion (P4).

8. A method as claimed in Claim 7, wherein said group (2) is rotated about said first axis (31) by rotating said movable seat (7; 3) about the first axis (31). 5
9. A method as claimed in any one of Claims 1 to 8, wherein said group (2) is elongated and comprises two opposite longitudinal ends (9c) and a central portion (9d) interposed between said two longitudinal ends (9c); said movable seat (7; 3) engaging the group (2) by said longitudinal ends (9c). 10
10. A method as claimed in Claim 3 and 9, wherein said first seat (3) engages the group (2) by said central portion (9d). 15
11. A method as claimed in Claim 3 and 9, wherein said second seat (5) engages the group (2) by said central portion (9d) and said longitudinal ends (9c). 20
12. A unit for transferring a group of cigarettes continuously between conveyors, the unit comprising a first conveyor (4) for feeding said group (2) continuously and in a first direction (D1) along a first path (P1) comprising an initial straight loading portion (P3) and a final transfer portion (P4) in a first orientation with respect to said first direction (D1); a second conveyor (6) for feeding said group (2) continuously and in a second direction (D2) along a second path (P2); and transfer means (30) acting along said transfer portion (P4) to transfer said group (2) from the first conveyor (4) to the second conveyor (6); characterized in that said first path (P1) and said second path (P2) are coplanar; said transfer means (30) comprising a movable seat (7; 3) for housing the group (2) in said first orientation and which is fed by said first conveyor (4) at least along said transfer portion (P4); and actuating means (38) for moving said movable seat (7; 3), with respect to the first conveyor (4) and as the movable seat (7; 3) is fed along said transfer portion (P4), between a first position along said first path (P1) and a second position along said second path (P2) to effect a rotation of said group (2) from said first orientation with respect to said first direction (D1) to a second orientation with respect to said second direction (D2), whereby the group (2) travels along said straight loading portion (P3) and said second path (P2) with two respective different orientations with respect to said first direction (D1) and said second direction (D2) respectively, said two orientations being substantially at 90° to each other. 45
13. A unit as claimed in Claim 12, wherein said first conveyor (4) and said second conveyor (6) comprise a first seat (3) and a second seat (5) respectively for said group (2); said movable seat (7; 3) being de-

finied by said first seat (3).

14. A unit as claimed in Claim 12, wherein said first conveyor (4) and said second conveyor (6) comprise a first seat (3) and a second seat (5) respectively for said group (2); said first conveyor (4) also comprising a third seat (7) defining said movable seat (7; 3).
15. A unit as claimed in Claim 13 or 14, wherein said first conveyor (4) is an output conveyor of a unit for forming said group (2), and said second conveyor (6) is a wrapping wheel.
16. A unit as claimed in Claim 13, 14 or 15, wherein second seat (5) is fitted in rotary manner to said second conveyor (6) to rotate about a second axis (14) movable with the second conveyor (6); said second conveyor (6) comprising a first control device (15) for controlling the angular position of said second seat (5) about said second axis (14).
17. A unit as claimed in Claim 16, wherein walls (17) movable, with respect to each other, between an open first position and a closed second position; and a second control device (19) for maintaining said two lateral walls (17) in said first position during transfer of said group (2), and for moving said two lateral walls (17) into said second position to retain the group (2) inside the second seat (5).
18. A unit as claimed in any one of Claims 12 to 17, wherein said movable seat (7; 3) is fitted to said first conveyor (4) to rotate about the first axis (31); said actuating means (38) controlling the angular position of the movable seat (7; 3) about the first axis (31).
19. A unit as claimed in Claim 14 and 18, wherein said first seat (3) is fixed with respect to said first conveyor (4).
20. A unit as claimed in Claim 14 and 18, wherein said third seat (7) is defined by two opposite tubular seats (35a), which engage respective longitudinal ends (9c) of said group (2), and are mounted for rotation about said first axis (31).
21. A unit as claimed in Claim 20, wherein said tubular seats (35a) are so mounted as to slide, in a third direction parallel to said first axis (31), between an open position and a closed position; said actuating means (38) controlling the position of said tubular seats (35a) in said third direction and between said open position and said closed position.
22. A unit as claimed in Claim 21, wherein each said tubular seat (35a) is defined by a respective gripping device (34) comprising two L-shaped clamps

(35) movable with respect to each other between a gripping position, in which the clamps (35) are substantially joined to each other to define the respective tubular seat (35a), and a release position, in which the clamps (35) are separated by a given distance; said transfer means (30) comprising a third control device (46) for controlling the position, between said release position and said gripping position, of each of said clamps (35) with respect to the corresponding other clamp (35).

Patentansprüche

1. Verfahren zum kontinuierlichen Umladen einer Gruppe von Zigaretten zwischen Transporteinrichtungen, wobei das Verfahren einen Transportschritt, bei dem die Gruppe (2) mit Hilfe einer ersten Transporteinrichtung (4), die sich kontinuierlich in einer ersten Richtung (D1) bewegt, längs eines ersten Wegs (P1) geführt wird, der einen anfänglichen geradlinigen Ladeabschnitt (P3) und einen abschließenden Umladeabschnitt (P4) in einer ersten Ausrichtung in bezug auf die erste Richtung (D1) enthält; und einen Umladeschritt umfaßt, in dem die Gruppe (2), wenn sie sich längs des Umladeabschnitts (P4) bewegt, von der ersten Transporteinrichtung (4) zu einer zweiten Transporteinrichtung (6) umgeladen wird, die sich in einer zweiten Richtung (D2) längs eines zweiten Wegs (P2) bewegt; wobei das Verfahren dadurch gekennzeichnet ist, daß der erste Weg (P1) und der zweite Weg (P2) in derselben Ebene verlaufen; wobei der Umladeschritt ausgeführt wird, indem die Gruppe (2) in der ersten Ausrichtung wenigstens dann, wenn die Gruppe längs des Umladeabschnitts (P4) geführt wird, in eine bewegliche Sitzfläche (7; 3) eingelegt wird, die durch die erste Transporteinrichtung (4) wenigstens längs des Umladeabschnitts (P4) geführt wird, gleichzeitig in bezug auf die erste Transporteinrichtung (4) bewegt wird und dann, wenn sich die bewegliche Sitzfläche längs des Umladeabschnitts (P4) bewegt, zwischen einer ersten Position längs des ersten Wegs (P1) und einer zweiten Position längs des zweiten Wegs (P2) bewegt wird, um eine Drehung der Gruppe (2) von der ersten Ausrichtung in bezug auf die erste Richtung (D1) zu einer zweiten Ausrichtung in bezug auf die zweite Richtung (D2) zu bewirken, wodurch sich die Gruppe (2) längs des geradlinigen Ladeabschnitts (P3) und des zweiten Wegs (P2) mit zwei jeweils unterschiedlichen Ausrichtungen in bezug auf die erste Richtung (D1) bzw. in bezug auf die zweite Richtung (D2) bewegt, wobei die beiden Ausrichtungen zueinander in einem Winkel von im wesentlichen 90° stehen.
2. Verfahren nach Anspruch 1, bei dem die erste

Transporteinrichtung (4) und die zweite Transporteinrichtung (6) eine erste Sitzfläche (3) bzw. eine zweite Sitzfläche (5) für die Gruppe (2) enthalten; wobei die bewegliche Sitzfläche (7; 3) die erste Sitzfläche (3) ist, die längs des Ladeabschnitts (P3) in einer im wesentlichen festen Position in bezug auf die erste Transporteinrichtung (4) geführt wird, und die längs des Umladeabschnitts (P4) in bezug auf die erste Transporteinrichtung (4) bewegt wird, um die Gruppe (2) zur zweiten Sitzfläche (5) umzuladen.

3. Verfahren nach Anspruch 1, bei dem die erste Transporteinrichtung (4) und die zweite Transporteinrichtung (6) eine erste Sitzfläche (3) bzw. eine zweite Sitzfläche (5) für die Gruppe (2) enthalten; wobei die bewegliche Sitzfläche (7; 3) eine dritte Sitzfläche (7) ist, die längs des Umladeabschnitts geführt wird, um an der in die erste Sitzfläche (3) eingelegten Gruppe (2) in Eingriff zu gelangen, und die in bezug auf die erste Sitzfläche (3) bewegt wird, um die Gruppe (2) auf der ersten Sitzfläche (3) zu entnehmen und die Gruppe (2) zur zweiten Sitzfläche (5) umzuladen.
4. Verfahren nach Anspruch 2 oder 3, bei dem die zweite Transporteinrichtung (6) eine einwickelnde Transporteinrichtung ist; wobei die zweite Sitzfläche (5) einen Bogen (10) aus Einwickelmaterial enthält, der im wesentlichen zu einem U gefaltet ist; und wobei der Bogen (10) aus Einwickelmaterial zu der zweiten Sitzfläche (5) geführt wird, bevor die Gruppe (2) zur zweiten Sitzfläche (5) umgeladen wird.
5. Verfahren nach Anspruch 4, bei dem die zweite Sitzfläche (5) durch eine Stirnwand (16) und durch zwei seitliche Wände (17) definiert ist, die zwischen einer ersten geöffneten Position und einer zweiten geschlossenen Position bewegt werden können, wobei die beiden seitlichen Wände (17) während des Umladens der Gruppe (2) in der ersten Position gehalten werden und in die zweite Position bewegt werden, um den Bogen (10) aus Einwickelmaterial und die Gruppe (2) zusammenzuhalten.
6. Verfahren nach Anspruch 3, 4 oder 5, bei dem die dritte Sitzfläche (7) längs des Umladeabschnitts (P4) mit einer Geschwindigkeit geführt wird, die im wesentlichen gleich der Bewegungsgeschwindigkeit der ersten Sitzfläche (3) ist.
7. Verfahren nach einem der Ansprüche 1 bis 6, bei dem die Drehung ausgeführt wird, indem die Gruppe (2) um eine erste Achse (31) gedreht wird, die mit der ersten Transporteinrichtung (4) längs des Umladeabschnitts (P4) bewegt werden kann.

8. Verfahren nach Anspruch 7, bei dem die Gruppe (2) um die erste Achse (31) gedreht wird, indem die bewegliche Sitzfläche (7; 3) um die erste Achse (31) gedreht wird. 5
9. Verfahren nach einem der Ansprüche 1 bis 8, bei dem die Gruppe (2) länglich ist und zwei gegenüberliegende Enden (9c) und einen mittleren Abschnitt (9d) enthält, der sich zwischen den beiden longitudinalen Enden (9c) befindet; wobei die bewegliche Sitzfläche (7; 3) an der Gruppe (2) an den longitudinalen Enden (9c) in Eingriff ist. 10
10. Verfahren nach den Ansprüchen 3 und 9, bei dem die erste Sitzfläche (3) mit der Gruppe (2) am mittleren Abschnitt (9d) in Eingriff ist. 15
11. Verfahren nach den Ansprüchen 3 und 9, bei dem die zweite Sitzfläche (5) mit der Gruppe (2) an dem mittleren Abschnitt (9d) und an den longitudinalen Enden (9c) in Eingriff ist. 20
12. Einheit zum kontinuierlichen Umladen einer Gruppe von Zigaretten zwischen Transporteinrichtungen, bei der die Einheit eine erste Transporteinrichtung (4) zum kontinuierlichen Zuführen der Gruppe (2) in eine erste Richtung (D1) längs eines ersten Wegs (P1), der einen anfänglichen geradlinigen Ladeabschnitt (P3) und einen abschließenden Umladeabschnitt (P4) in einer ersten Ausrichtung in bezug auf die erste Richtung (D1); eine zweite Transporteinrichtung (6), um die Gruppe (2) in einer zweiten Richtung (D2) längs eines zweiten Wegs (P2) kontinuierlich zuzuführen; und eine Umladevorrichtung (30) umfaßt, die längs des Umladeabschnitts (P4) wirkt, um die Gruppe (2) von der ersten Transporteinrichtung (4) zur zweiten Transporteinrichtung (6) umzuladen; dadurch gekennzeichnet, daß der erste Weg (P1) und der zweite Weg (P2) in derselben Ebene verlaufen; daß die Umladevorrichtung (30) eine bewegliche Sitzfläche (7; 3) zum Aufnehmen der Gruppe (2) in der ersten Ausrichtung enthält, wobei diese durch die erste Transporteinrichtung (4) wenigstens längs des Umladeabschnitts (P4) geführt wird; und daß eine Betätigungsvorrichtung (38) vorgesehen ist, die die bewegliche Sitzfläche (7; 3) in bezug auf die erste Transporteinrichtung (4) und dann, wenn die bewegliche Sitzfläche (7; 3) längs des Umladeabschnitts (P4) bewegt wird, zwischen einer ersten Position längs des ersten Wegs (P1) und einer zweiten Position längs des zweiten Wegs (P2) bewegt, um eine Drehung der Gruppe (2) von der ersten Ausrichtung in bezug auf die erste Richtung (D1) in eine zweite Ausrichtung in bezug auf die zweite Richtung (D2) zu bewirken, wodurch sich die Gruppe (2) längs des geradlinigen Ladeabschnitts (P3) und längs des zweiten Wegs (P2) mit zwei jeweils unterschiedlichen Ausrichtungen in bezug auf die erste Richtung (D1) bzw. auf die zweite Richtung (D2) bewegt, wobei die beiden Ausrichtungen zueinander in einem Winkel von im wesentlichen 90° stehen. 25
13. Einheit nach Anspruch 12, bei der die erste Transporteinrichtung (4) und die zweite Transporteinrichtung (6) eine erste Sitzfläche (3) bzw. eine zweite Sitzfläche (5) für die Gruppe (2) enthalten; wobei die bewegliche Sitzfläche (7; 3) durch die erste Sitzfläche (3) definiert ist. 30
14. Einheit nach Anspruch 12, bei der die erste Transporteinrichtung (4) und die zweite Transporteinrichtung (6) eine erste Sitzfläche (3) bzw. eine zweite Sitzfläche (5) für die Gruppe (2) enthalten; wobei die erste Transporteinrichtung (4) außerdem eine dritte Sitzfläche (7) enthält, die die bewegliche Sitzfläche (7; 3) definiert. 35
15. Einheit nach Anspruch 13 oder 14, bei der die erste Transporteinrichtung (4) eine Ausgabe-Transporteinrichtung zum Formen der Gruppe (2) und die zweite Transporteinrichtung (6) ein einwickelndes Rad ist. 40
16. Einheit nach Anspruch 13, 14 oder 15, bei der die zweite Sitzfläche (5) drehbar an der zweiten Transporteinrichtung (6) angebracht ist, um sich um eine zweite Achse (14) zu drehen, die mit der zweiten Transporteinrichtung (6) bewegt werden kann; wobei die zweite Transporteinrichtung (6) eine erste Steuervorrichtung (15) zum Steuern der Winkelposition der zweiten Sitzfläche (5) um die zweite Achse (14) enthält. 45
17. Einheit nach Anspruch 16, bei der Wände (17) zueinander zwischen einer geöffneten ersten Position und einer geschlossenen zweiten Position bewegt werden können; und eine zweite Steuervorrichtung (19) dazu dient, die zwei seitlichen Wände (17) während des Umladens der Gruppe (2) in der ersten Position zu halten und die zwei seitlichen Wände (17) in die zweite Position zu bewegen, um die Gruppe (2) in der zweiten Sitzfläche (5) zu halten. 50
18. Einheit nach einem der Ansprüche 12 bis 17, bei der die bewegliche Sitzfläche (7; 3) an der ersten Transporteinrichtung (4) angebracht ist, um sich um die erste Achse (31) zu drehen; wobei die Betätigungsvorrichtung (38) die Winkelposition des beweglichen Sitzfläche (7; 3) um die erste Achse (31) steuert. 55
19. Einheit nach den Ansprüchen 14 und 18, bei der die erste Sitzfläche (3) in bezug auf die erste Transporteinrichtung (4) feststehend ist.

20. Einheit nach den Ansprüchen 14 und 18, bei der die dritte Sitzfläche (7) durch zwei gegenüberliegende röhrenförmige Sitzflächen (35a) definiert ist, die jeweils an den longitudinalen Enden (9c) der Gruppe (2) in Eingriff sind und für die Drehung um die erste Achse (31) angebracht sind. 5
21. Einheit nach Anspruch 20, bei der die röhrenförmigen Sitzflächen (35a) so angebracht sind, damit sie in einer dritten Richtung, die zur ersten Achse (31) parallel verläuft, zwischen einer geöffneten Position und einer geschlossenen Position gleiten; wobei die Betätigungseinrichtung (38) die Position der röhrenförmigen Sitzflächen (35a) in der dritten Richtung und zwischen der geöffneten Position und der geschlossenen Position steuert. 10
22. Einheit nach Anspruch 21, bei der die röhrenförmige Sitzfläche (35a) durch eine entsprechende Klemmvorrichtung (34) definiert ist, die zwei L-förmige Klammern (35) enthält, die zueinander zwischen einer Klemmposition, in der die Klammern (35) im wesentlichen aneinander anstoßen, um die entsprechende röhrenförmige Sitzfläche (35a) zu definieren, und einer Klemmposition bewegt werden können, in der die Klammern (35) um eine vorgegebene Entfernung getrennt sind; wobei die Umladeeinrichtung (30) eine dritte Steuervorrichtung (46) enthält, um die Position jeder der Klammern (35) in bezug auf die jeweils andere Klammer (35) zwischen der Freigabeposition und der Klemmposition zu steuern. 15

Revendications

1. Procédé de transfert d'un groupe de cigarettes en continu entre des transporteurs, le procédé comprenant une étape de transport dans laquelle ledit groupe (2) est avancé, au moyen d'un premier transporteur (4) se déplaçant en continu dans une première direction (D1), le long d'un premier chemin (P1) comportant une partie initiale droite de chargement (P3) et une partie finale de transfert (P4), dans une première orientation par rapport à ladite première direction (D1); et une étape de transfert dans laquelle ledit groupe (2) est transféré, pendant que le groupe (2) se déplace le long de ladite partie de transfert (P4), dudit premier transporteur (4) à un second transporteur (6) se déplaçant en continu dans une seconde direction (D2) le long d'un second chemin (P2); le procédé étant caractérisé en ce que ledit premier chemin (P1) et ledit second chemin (P2) sont coplanaires; ladite étape de transfert étant exécutée en logeant le groupe (2) dans ladite première orientation, au moins pendant que le groupe est avancé le long de ladite partie de transfert (P4), à l'intérieur d'un siège mobile (7; 3), 20

lequel est avancé par ledit premier transporteur (4) au moins le long de ladite partie de transfert (P4), et est déplacé simultanément, par rapport audit premier transporteur (4) et pendant que le siège mobile se déplace le long de la partie de transfert (P4), entre une première position le long dudit premier chemin (P1) et une seconde position le long dudit second chemin (P2), afin d'effectuer une rotation dudit groupe (2) depuis ladite première orientation par rapport à ladite première direction (D1) jusqu'à une seconde orientation par rapport à ladite seconde direction (D2), grâce à quoi le groupe (2) se déplace le long de ladite partie droite de chargement (P3) et dudit second chemin (P2) dans deux orientations respectives différentes par rapport à ladite première direction (D1) et à ladite seconde direction (D2), respectivement, lesdites deux orientations étant sensiblement à 90° l'une par rapport à l'autre. 25

2. Procédé selon la revendication 1, dans lequel ledit premier transporteur (4) et ledit second transporteur (6) comportent un premier siège (3) et un second siège (5) respectivement pour ledit groupe (2); ledit siège mobile (7; 3) étant ledit premier siège (3), qui est déplacé le long de ladite partie de chargement (P3) dans une position sensiblement fixe par rapport audit premier transporteur (4), et est déplacé, le long de ladite partie de transfert (P4), par rapport au premier transporteur (4) pour transférer le groupe (2) au second siège (5). 30
3. Procédé selon la revendication 1, dans lequel ledit premier transporteur (4) et ledit second transporteur (6) comportent un premier siège (3) et un second siège (5) respectivement pour ledit groupe (2); ledit siège mobile (7; 3) étant un troisième siège (7), lequel est déplacé le long de ladite partie de transfert (P4) pour engager ledit groupe (2) logé à l'intérieur du premier siège (3), et est déplacé par rapport au premier siège (3) pour enlever le groupe (2) du premier siège (3) et transférer le groupe (2) au second siège (5). 35
4. Procédé selon la revendication 2 ou 3, dans lequel ledit second transporteur (6) est un transporteur d'enveloppement; ledit second siège (5) logeant une feuille (10) de matière d'enveloppement pliée sensiblement en un U; et ladite feuille (10) de matière d'enveloppement étant amenée audit second siège (5) avant que ledit groupe (2) soit transféré au second siège (5). 40
5. Procédé selon la revendication 4, dans lequel ledit second siège (5) est défini par une paroi extrême (16), et par deux parois latérales (17) mobiles entre une première position ouverte, et une seconde position, fermée; lesdites deux parois latérales (17) étant maintenues dans ladite première position 45

pendant un transfert dudit groupe (2), et étant amenées dans ladite seconde position pour maintenir ensemble ladite feuille (10) de matière d'enveloppement et ledit groupe (2).

6. Procédé selon la revendication 3, 4 ou 5, dans lequel ledit troisième siège (7) est avancé le long de ladite partie de transfert (P4) à une vitesse sensiblement égale à la vitesse de déplacement dudit premier siège (3). 5
7. Procédé selon l'une quelconque des revendications 1 à 6, dans lequel ladite rotation est effectuée en faisant tourner le groupe (2) autour d'un premier axe (31) mobile avec le premier transporteur (4) le long de ladite partie de transfert (P4). 10
8. Procédé selon la revendication 7, dans lequel ledit groupe (2) est tourné autour dudit premier axe (31) par rotation dudit siège mobile (7 ; 3) autour du premier axe (31). 15
9. Procédé selon l'une quelconque des revendications 1 à 8, dans lequel ledit groupe (2) est allongé et comporte deux extrémités longitudinales opposées (9c) et une partie centrale (9d) interposées entre lesdites deux extrémités longitudinales (9c) ; ledit siège mobile (7 ; 3) engageant le groupe (2) par lesdites extrémités longitudinales (9c). 20
10. Procédé selon la revendication 3 et 9, dans lequel ledit premier siège (3) engage le groupe (2) par ladite partie centrale (9d). 25
11. Procédé selon les revendications 3 et 9, dans lequel ledit second siège (5) engage le groupe (2) par ladite partie centrale (9d) et lesdites extrémités longitudinales (9c). 30
12. Unité pour transférer un groupe de cigarettes en continu entre des transporteurs, l'unité comportant un premier transporteur (4) destiné à faire avancer ledit groupe (2) en continu et dans une première direction (D1) le long d'un premier chemin (P1) comportant une partie initiale droite de chargement (P3) et une partie finale de transfert (P4) dans une première orientation par rapport à ladite première direction (D1) ; un second transporteur (6) destiné à faire avancer ledit groupe (2) en continu et dans une seconde direction (D2) le long d'un second chemin (P2) ; et un moyen de transfert (30) agissant le long de ladite partie de transfert (P4) pour transférer ledit groupe (2) du premier transporteur (4) au second transporteur (6) ; caractérisée en ce que ledit premier chemin (P1) et ledit second chemin (P2) sont coplanaires ; ledit moyen de transfert (30) comportant un siège mobile (7 ; 3) destiné à loger le groupe (2) dans ladite première orientation et qui est avan-

cé par ledit premier transporteur (4) au moins le long de ladite partie de transfert (P4) ; et un moyen d'actionnement (38) destiné à déplacer ledit siège mobile (7 ; 3), par rapport au premier transporteur (4) et pendant que le siège mobile (7 ; 3) est avancé le long de ladite partie de transfert (P4), entre une première position le long dudit premier chemin (P1) et une seconde position le long dudit second chemin (P2) pour effectuer une rotation dudit groupe (2) de ladite première orientation par rapport à ladite première direction (D1) à une seconde orientation par rapport à ladite seconde direction (D2), grâce à quoi le groupe (2) se déplace le long de ladite partie droite de chargement (P3) et dudit second chemin (P2) dans deux orientations respectives différentes par rapport à ladite première direction (D1) et à ladite seconde direction (D2), respectivement, lesdites deux orientations étant sensiblement à 90° l'une par rapport à l'autre.

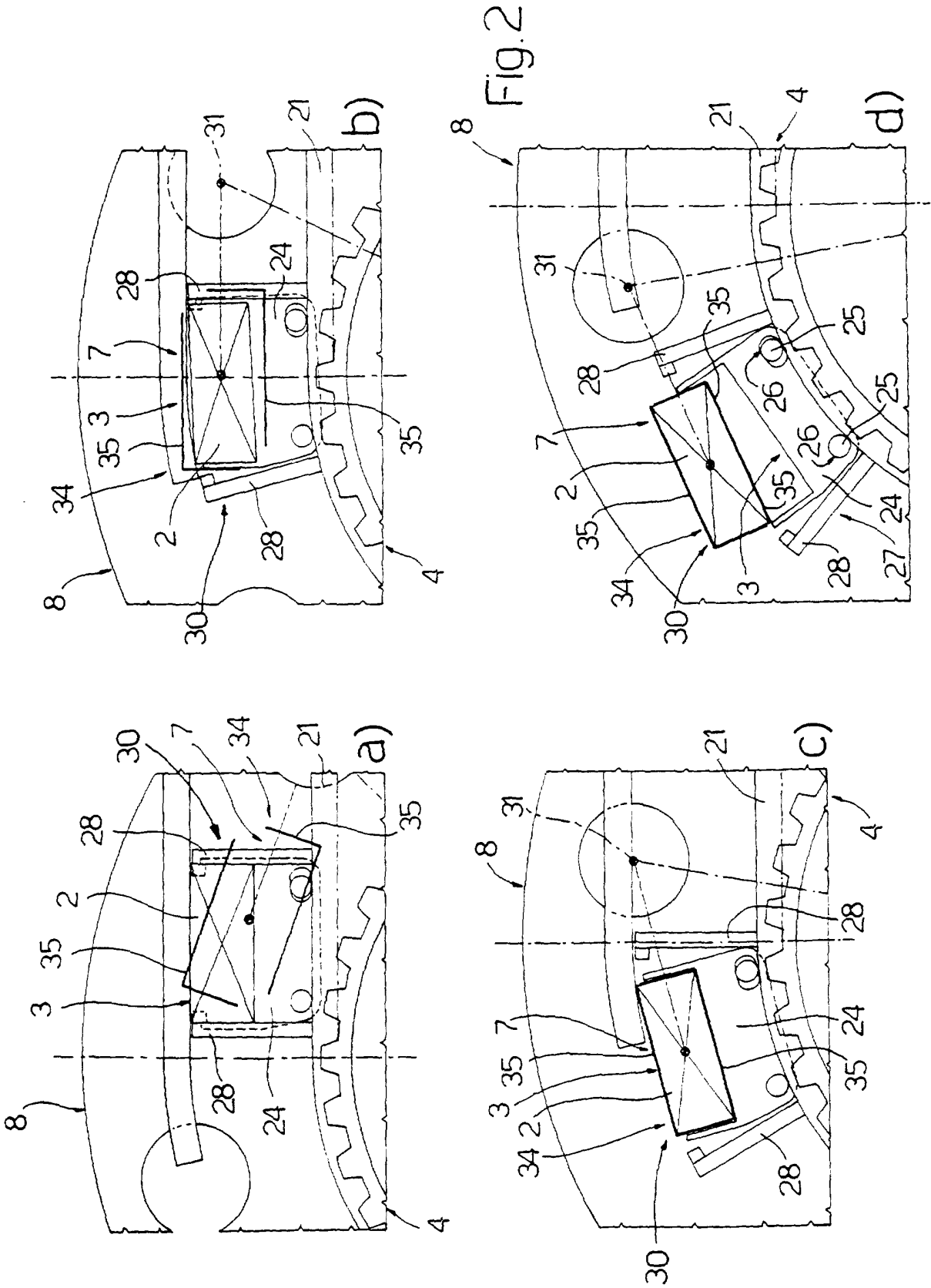
13. Unité selon la revendication 12, dans laquelle ledit premier transporteur (4) et ledit second transporteur (6) comportent un premier siège (3) et un second siège (5) respectivement pour ledit groupe (2) ; ledit siège mobile (7 ; 3) étant défini par ledit premier siège (3). 35
14. Unité selon la revendication 12, dans laquelle ledit premier transporteur (4) et ledit second transporteur (6) comportent un premier siège (3) et un second siège (5) respectivement pour ledit groupe (2) ; ledit premier transporteur (4) comportant aussi un troisième siège (7) définissant ledit siège mobile (7 ; 3). 40
15. Unité selon la revendication 13 ou 14, dans laquelle ledit premier transporteur (4) est un transporteur de sortie d'une unité destinée à former ledit groupe (2), et ledit second transporteur (6) est une roue d'enveloppement. 45
16. Unité selon la revendication 13, 14 ou 15, dans laquelle ledit second siège (5) est monté de manière à pouvoir tourner sur ledit second transporteur (6) pour tourner autour d'un second axe (14) mobile avec le second transporteur (6) ; ledit second transporteur (6) comportant un premier dispositif de commande (15) destiné à commander la position angulaire dudit second siège (5) autour dudit second axe (14). 50
17. Unité selon la revendication 16, dans laquelle des parois (17) sont mobiles, l'une par rapport à l'autre, entre une première position, ouverte, et une seconde position, fermée ; et un second dispositif de commande (19) est destiné à maintenir lesdites deux parois latérales (17) dans ladite première position pendant un transfert dudit groupe (2), et à déplacer

lesdites deux parois latérales (17) jusque dans ladite seconde position pour retenir le groupe (2) à l'intérieur du second siège (5).

- 18.** Unité selon l'une quelconque des revendications 12 à 17, dans laquelle ledit siège mobile (7 ; 3) est monté sur ledit premier transporteur (4) de façon à tourner autour du premier axe (31) ; ledit moyen d'actionnement (38) commandant la position angulaire du siège mobile (7 ; 3) autour du premier axe (31). 5
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- 19.** Unité selon les revendications 14 et 18, dans laquelle le premier siège (3) est fixe par rapport audit premier transporteur (4). 15
- 20.** Unité selon les revendications 14 et 18, dans laquelle ledit troisième siège (7) est défini par deux sièges tubulaires opposés (35a), qui portent contre des extrémités longitudinales respectives (9c) dudit groupe (2), et sont montés de façon à tourner autour dudit premier axe (31). 20
- 21.** Unité selon la revendication 20, dans laquelle lesdits sièges tubulaires (35a) sont montés de façon à glisser, dans une troisième direction parallèle audit premier axe (31), entre une position ouverte et une position fermée ; ledit moyen d'actionnement (38) commandant la position desdits sièges tubulaires (35a) dans ladite troisième direction et entre ladite position ouverte et ladite position fermée. 25
30
- 22.** Unité selon la revendication 21, dans laquelle chacun desdits sièges tubulaires (35a) est défini par un dispositif de prise respective (34) comportant deux brides (35) de forme en L mobiles l'une par rapport à l'autre entre une position de prise, dans laquelle les brides (35) sont sensiblement réunies l'une à l'autre pour définir le siège tubulaire respectif (35a), et une position de libération, dans laquelle les brides (35) sont séparées d'une distance donnée ; ledit moyen de transfert (30) comportant un troisième dispositif de commande (46) destiné à commander la position, entre ladite position de libération et ladite position de prise, de chacune desdites brides (35) par rapport à l'autre bride correspondante (35). 35
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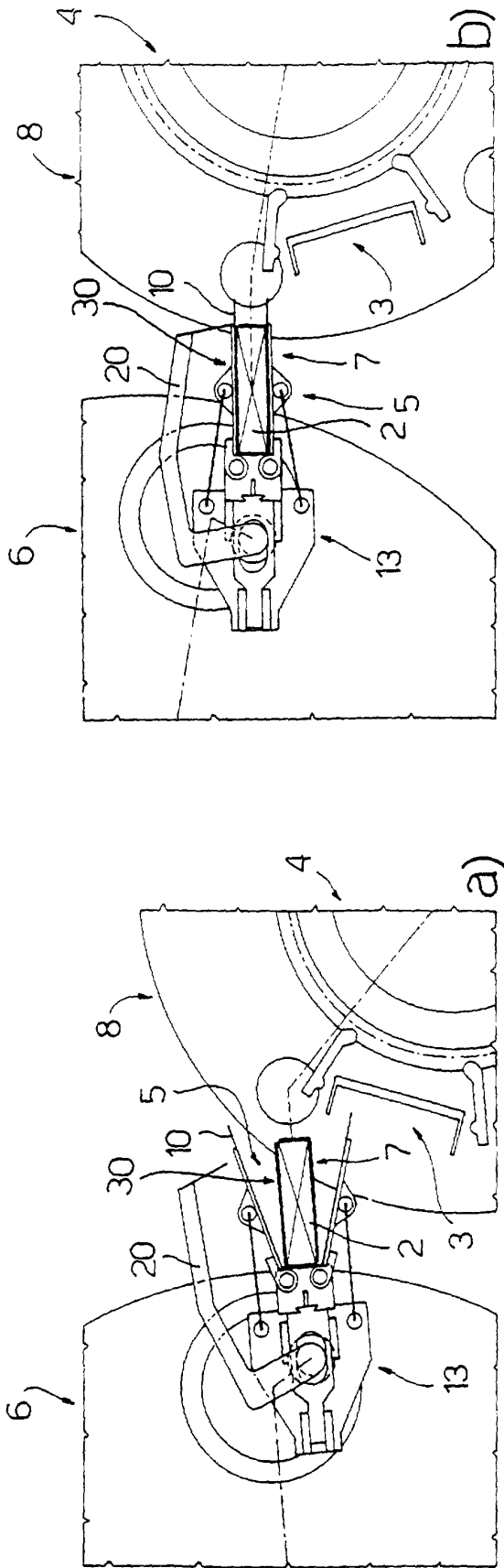


FIG. 3

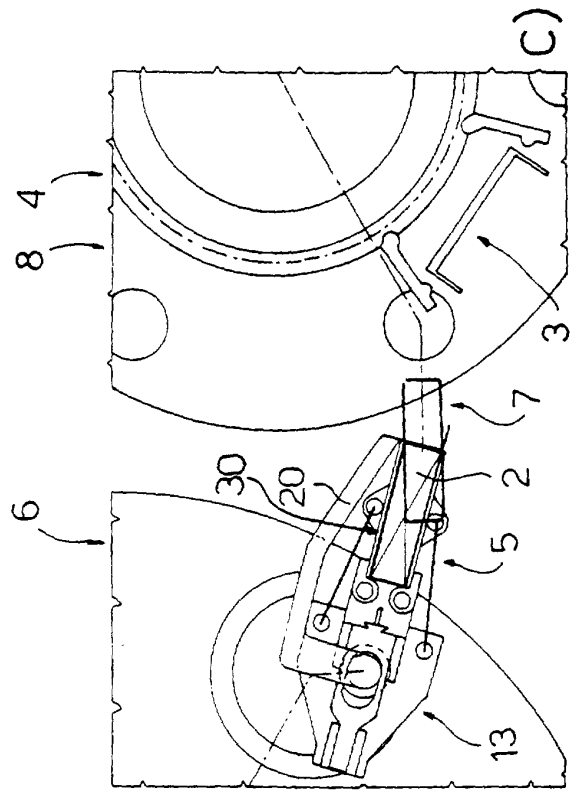
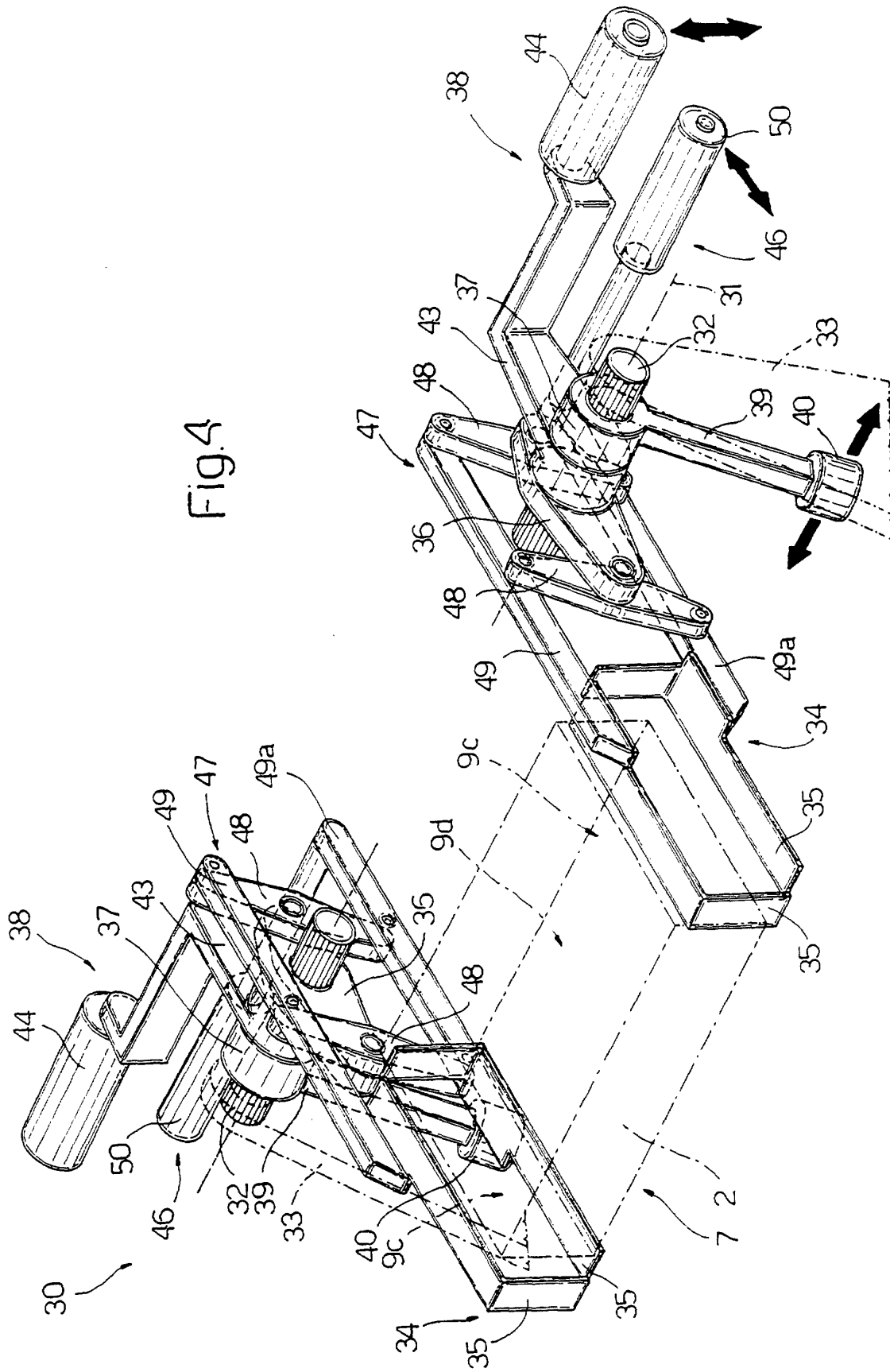


FIG. 4



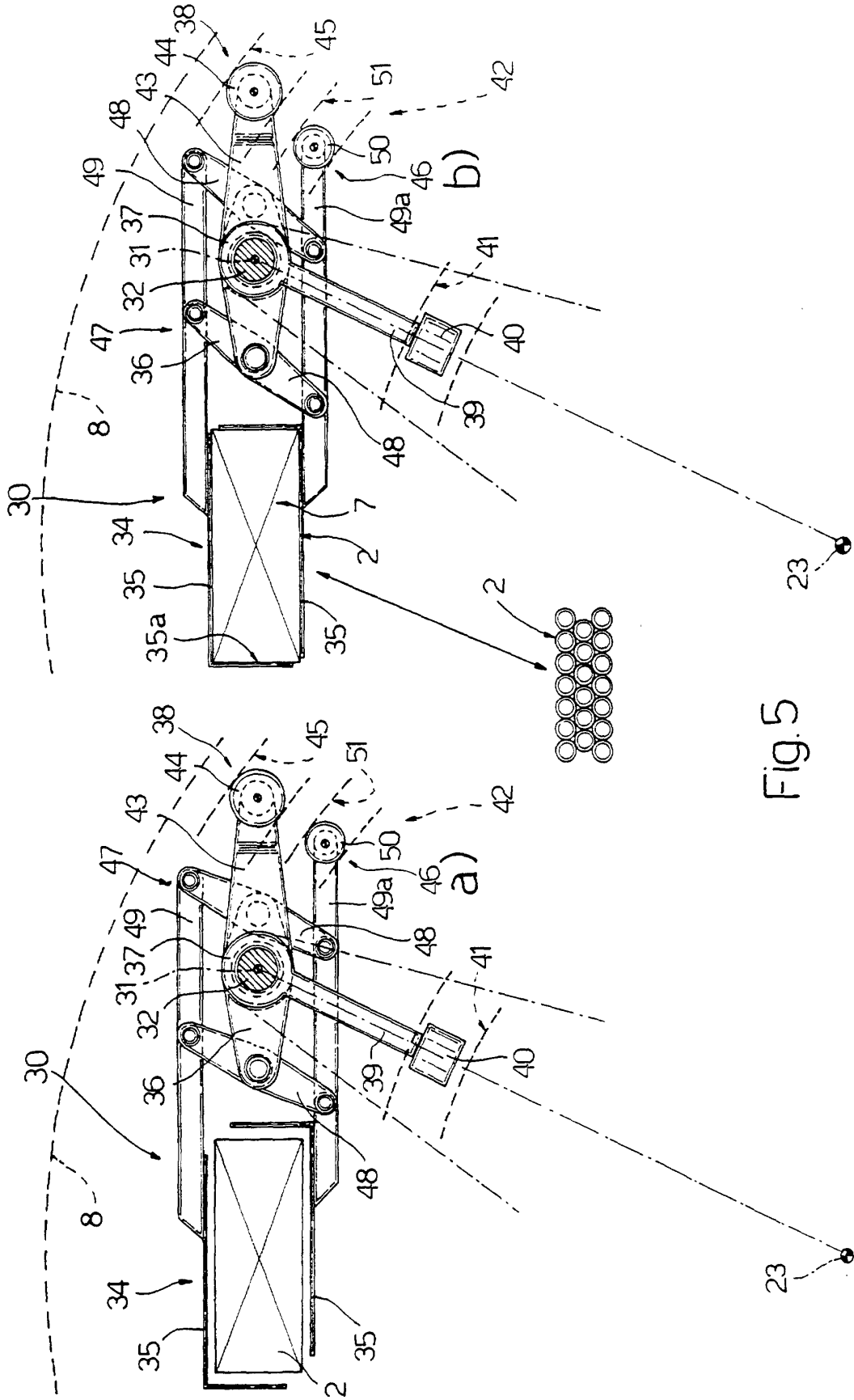


Fig. 5

